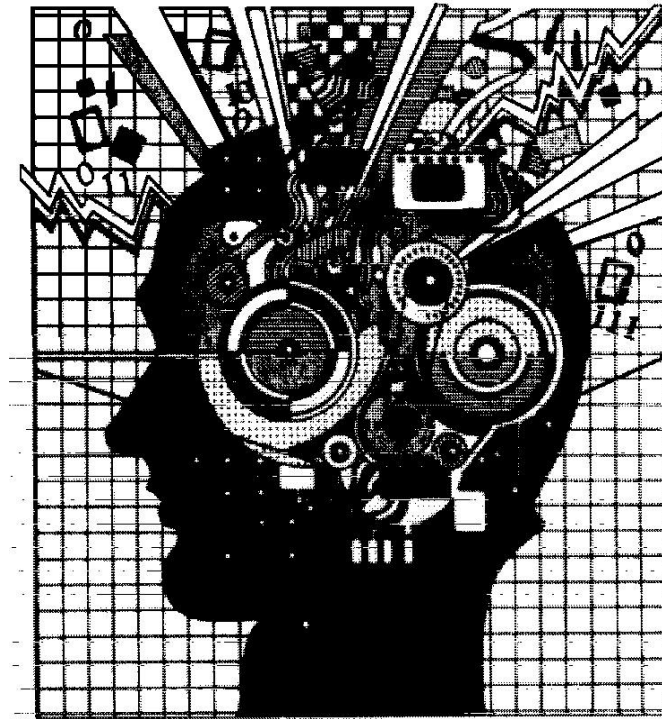


Montpelier Schools



Technology Scope and Sequence

Montpelier Schools
Kindergarten
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Understand basic computer and multimedia technology concepts and terminology.		
Skills	Level	Comments
Locate computer and multimedia technology in the classroom and identify it by name • Computer • VCR/DVD • Television • Projector • Listening Station	I	
Name the basic parts of a computer • Monitor • Keyboard • CPU • Mouse	I	
Use computer and multimedia technology with teacher assistance • Computer • TV • DVD/VCR • Listening Station	I	

Benchmark B: Demonstrate operation of basic computer and multimedia technology tools.		
Skills	Level	Comments
Listen to directions and use proper care when handling computer and multimedia technology. • Demonstrate proper behavior while using • No eating or drinking	I	
Follow the correct order for turning computers and multimedia technology resources on and off with teacher assistance.	I	
Identify and use input and output devices to operate computer and multimedia technology tools with teacher assistance. • Keyboard and Mouse • Monitor and Printer	I	
Use software programs with teacher assistance. • Star Reader • SMART Notebook	I	
Discover that technology tools can help solve problems.	I	
View multimedia presentations and discuss motion and sound.	I	

Benchmark C: Use productivity tools to produce creative works.		
Skills	Level	Comments
Recognize productivity tools • Paint • SMART Notebook	I	
Identify/recognize technology resources • pre-selected Web sites • educational software	I	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Investigate the nature and operations of communication systems.		
Skills	Level	Comments
Explore different types of media formats used to communicate information • e-mail • TV • Newspapers • Film/Video • Telephones • Web pages	I	

Benchmark B: Explore how information can be published and presented in different formats.		
Skills	Level	Comments
Examine digital images in learning (e.g., students select pictures of community helpers from teacher-identified materials) • Online Newspapers • Online Magazines • Camera • Webpages	I	

Benchmark C: Participate in group projects and learning activities using technology communications.		
Skills	Level	Comments
Engage in teacher-directed online learning activities • Online field trips (Distance Learning Activities) • Video Streaming	I	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: State what information is, and show where it can be found.		
Skills	Level	Comments
Identify what information is, and recognize that it can be represented in a variety of ways - Numbers - Words - Pictures - Sounds	I	
Identify places where information can be found and retrieve information from a specified location - Classroom - Book - School or Public Library - Internet Web Site - Computer file	I	

Benchmark B: Use a simple research process model which includes deciding what to use, finding resources, using information and checking work to generate a product.		
Skills	Level	Comments
Ask questions about an identified topic.	I	
View information in an information source selected by the teacher or librarian. - Web Page – Online Encyclopedia - United Streaming	I	
Tell what was learned using technology tools - Use a computer drawing/paint program to draw a picture that explains what was learned - Use SMART Notebook to draw a picture that explains what was learned	I	

Benchmark C: Apply basic browser and navigation skills to find information from the Internet		
Skills	Level	Comments
Talk about the Internet as an information source. - Educational - Entertainment	I	

Montpelier Schools
 First Grade
 Technology Applications and Information Tools
 Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Understand basic computer and multimedia technology concepts and terminology.		
Skills	Level	Comments
Locate computer and multimedia technology in the classroom and identify it by name	C	
Identify and use computer and multimedia technology and know the terms used to describe it • Computer • Printer • VCR-DVD player • Audio players	I	
Name the basic parts of a computer	C	
Identify various parts of a computer by name • Monitor • Mouse • Keyboard • Power button • Disk drive • CD/DVD drive	I	
Use computer and multimedia technology with teacher assistance • Computer • TV • DVD/VCR • Listening Station	C	

Benchmark B: Demonstrate operation of basic computer and multimedia technology tools.		
Skills	Level	Comments
Kindergarten Skills	C	
Discuss and demonstrate proper care when using computer and multimedia technology resources • Describe rules • List directions	I	
Turn computer and multimedia technology resources on and off.	C	
Discuss software and why it is necessary to operate computer and multimedia technology.	I	
Start, use and exit software programs with teacher assistance. • Star Reader • Accelerated Reader • SMART Notebook	C	
Use input and output devices to operate computer and multimedia technology tools with teacher assistance. Keyboard and Mouse Monitor and Printer SMART Board	C	

Use software programs designed to develop problem-solving skills.	I	
Begin to locate letters and special keys on the keyboard with teacher assistance (e.g., enter key, escape key, space bar).	I	

Benchmark C: Use productivity tools to produce creative works.		
Skills	Level	Comments
Kindergarten Skills	C	
Describe how productivity tools are used to create documents, presentations and drawings. • Paint • SMART Notebook • SMART Ideas	I	
Use technology resources with teacher assistance • Pre-selected Web sites • Launching applications • Educational software	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Investigate the nature and operations of communication systems.		
Skills	Level	Comments
Kindergarten Skills	C	
Explain media formats used to communicate information • e-mail • Newsletters • TV • Phones • Newspapers • Web pages	I	
Show, within a group, various types of communication formats used in everyday life.	I	

Benchmark B: Explore how information can be published and presented in different formats.		
Skills	Level	Comments
Kindergarten Skills	C	
Create documents with teacher assistance (e.g., students observe the teacher making a document, they add ideas, and select images for the teacher to import). • Microsoft Word • SMART Ideas • SMART Notebook	I	
Identify and explore different forms of electronic communication • Written documents in electronic form • e-mail • Web pages • Video and other forms of multimedia	I	

Benchmark C: Participate in group projects and learning activities using technology communications.		
Skills	Level	Comments
Engage in teacher-directed online learning activities - online field trips - Video Streaming	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: State what information is, and show where it can be found.		
Skills	Level	Comments
Kindergarten Skills	C	
Talk about the difference between factual information and fiction - What is real and what is pretend or make-believe - Not all information on the internet or in books is factual	I	
Use a graphic organizer to sort information. - SMART Ideas - SMART Notebook	I	

Benchmark B: Use a simple research process model which includes deciding what to use, finding resources, using information and checking work to generate a product.		
Skills	Level	Comments
Ask questions about an identified topic and list facts already known about the topic (e.g., graphic organizers for brainstorming, charting, webbing) - SMART Ideas - SMART Notebook	I	
Find information in a technology-based resource (e.g., Web site, database, DVD, software program, video). - United Streaming - Web Pages (e.g. Online Encyclopedia)	C	
Use technology to tell what was learned from information gathered (e.g., use simple presentation tools to create a poster, book, slide show). - SMART Ideas - SMART Notebook	C	
Tell where information came from (e.g., name of Web sites, software, databases).	I	

Benchmark C: Apply basic browser and navigation skills to find information from the Internet.		
Skills	Level	Comments
List types of information available on the Internet • Educational Research • Entertainment • Current Events - News	C	
Use teacher or librarian selected Web site to find information or learn new things. • Teacher Web Page • SynchronEyes	I	
Use browser tools and buttons: • Forward and back button; • Home button; and • Choose a link from the bookmarks or favorites list.	I	

Montpelier Schools
 Second Grade
 Technology Applications and Information Tools
 Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Understand basic computer and multimedia technology concepts and terminology.		
Skills	Level	Comments
Identify and describe the purpose of various types of computer and multimedia technology	C	
Use correct terminology when talking about computers and multimedia technology.	C	
Know that software is necessary to operate computer technology.	I	
Use a variety of computer and multimedia technology resources for directed learning activities. • Computer • VCR/DVD player • audio player • camera	C	

Benchmark B: Demonstrate operation of basic computer and multimedia technology tools.		
Skills	Level	Comments
Demonstrate proper care of computer and multimedia technology resources.	C	
Identify and use input and output devices to operate and interact with computers and multimedia technology resources • Scanner • Digital camera • Video camera	I	
Demonstrate problem-solving skills within a software application.	C	
Develop a slide show presentation with teacher assistance (e.g., small groups work together to create slides or hypermedia products). • PowerPoint • SMART Notebook • PhotoStory	I	
Use proper keyboarding techniques • Placing their fingers on home row keys • Use typing tutorial software to learn keyboarding	I	

Benchmark C: Use productivity tools to produce creative works		
Skills	Level	Comments
Use productivity tools with teacher assistance - Word processing (Wordpad, Word) - Presentations (PowerPoint, SMART Notebook) - Drawing programs (Paint, SMART Ideas)	C	
Use technology resources with teacher assistance for communication and illustration of thoughts and ideas - creative stories (Word, Wordpad) - drawings (Paint, SMART Ideas) - presentations (PowerPoint, SMART Notebook) - publication software (Publisher)	I	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Investigate the nature and operations of communication systems.		
Skills	Level	Comments
Use media to view information.	C	
Participate in the creation of media products (e.g., use appropriate communication tools with teacher assistance).	I	

Benchmark B: Explore how information can be published and presented in different formats.		
Skills	Level	Comments
Use graphic organizers to plan a presentation (e.g., graphic organizing, charting or mapping software). SMART Ideas	C	
Compare digital graphic images used to portray a topic (e.g., students are given images on the same topic from two different sources and explain why one may be better for the assignment than another). SMART Ideas	I	
Present information in an electronic format, including text, graphics or multimedia (e.g., write and illustrate a story based on writing prompt, slide show or photo album). - Microsoft Word - Microsoft Publisher - Microsoft PowerPoint - SMART Totebook	I	
Compose class e-mail (e.g., each student has an opportunity to contribute ideas for e-mail messages related to their studies).	I	

Benchmark C: Participate in group projects and learning activities using technology communications.		
Skills	Level	Comments
Use e-mail to share information in a teacher-directed group e-mail activity (e.g., comparing class information with another class at a remote location).	I	
Participate in communication sessions to interact with other classes in teacher-directed online project - e-mail - Video conferencing - Telephones	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: State what information is, and show where it can be found.		
Skills	Level	Comments
Tell about the purposes for information use (e.g., information is helpful to solve problems, find answers, learn).	I	
Distinguish between fact and fiction (e.g., discuss and compare a fact-based document about a topic with a story about the same topic).	C	

Benchmark B: Use a simple research process model which includes deciding what to use, finding resources, using information and checking work to generate a product.		
Skills	Level	Comments
Discuss the question assigned by the teacher and where the information might be found.	C	
Use the online library catalog to locate information sources by title, author or subject.	I	
Select needed information from teacher-selected Web sites, electronic encyclopedias and other electronic collections.	C	
Give credit to the sources used for work by listing the author and the name of the source.	I	
Tell how information was found.	C	

Benchmark C: Apply basic browser and navigation skills to find information from the Internet.		
Skills	Level	Comments
Demonstrate the use of browser elements including the toolbar, buttons, favorites or bookmarks, and tell their function	C	
Search for information in an online encyclopedia using a topical search (e.g., choose from a list of topics, moving from broad—animals, to more specific—panda).	I	
Read information from a Web site assigned by teacher and identify the name and topic of the Web site.	C	

Montpelier Schools
 Third Grade
 Technology Applications and Information Tools
 Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools

Benchmark A:

Understand computer and multimedia technology concepts and communicate using the correct terminology.

Skills	Level	Comments
Discuss the purpose of various types of computer and multimedia technology equipment using appropriate terminology.	C	
Communicate about computers and multimedia technology using correct terminology.	C	

Benchmark B:

Use appropriate tools and technology resources to complete tasks and solve problems.

Skills	Level	Comments
Identify and use input and output devices to operate and interact with computers and multimedia technology resources: • scanner • digital cameras	C	
Discuss networks and their use (e.g., how computers connect to: • Printers • Servers • the Internet).	I	
Identify and use a variety of software programs. • Microsoft Office • SMART Notebook • SMART Ideas • Web Browser	C	
Use technologies for particular content areas (e.g.,: • calculators for math • computerized microscopes for science • books on CD-ROM for language arts).	C	
Show how you can find answers to problems using electronic resources including the Internet.	C	
Tell a story using presentation software.	C	
Touch-type letters on the keyboard with both hands (e.g., begin to learn how to type/keyboard, use continuous keystrokes).	I	

Benchmark C: Use productivity tools to produce creative works and prepare publications.		
Skills	Level	Comments
Use and demonstrate how productivity tools support personal productivity - word processing application can be used to create a letter, - spreadsheet application can be used to perform calculations - a database program can be used to compile and analyze data - presentation software can be used to share results	I	
Use and demonstrate how peripherals support personal productivity - digital cameras are used to create images - scanners are used to create digital images - printers are output devices that allow us to make copies of what is created using technology - storage devices make it possible to store large amounts of information	I	
Identify/recognize technology resources for communication, collaboration, presentation and illustration of thoughts and ideas - e-mail - graphic organizers - video cameras - handheld devices	I	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Identify the concepts and operations of communication systems.		
Skills	Level	Comments
Include the elements of design such as contrast, size and arrangement of student-created projects in print and electronic media	I	
Discuss the costs and connectivity of simple communication systems - e-mail - telephones - Internet services	I	

Benchmark B: Develop, publish and present information in print and digital formats.		
Skills	Level	Comments
Use graphic organizers to sequence and organize information and projects.	I	
Incorporate the use of a digital image into a document - clipart - picture from digital camera - scanned images	I	
Use software to publish information in printed form (e.g., card, calendar, banner). Microsoft Publisher	I	

Benchmark B: Develop, publish and present information in print and digital formats.		
Skills	Level	Comments
Use graphics and text within a slide show (e.g., create a presentation about Ohio's state bird, symbol or flag, as a presentation using pictures). - SMART Notebook - PowerPoint	C	
Send and receive e-mail.	I	

Benchmark C: Use technology communications to participate in online group collaborative interactive projects and activities.		
Skills	Level	Comments
Compose, send and reply to e-mail messages with teacher direction.	C	
Engage in online learning (e.g., Web activities, virtual field trips, video-conferencing).	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: Describe types of information: facts, opinions, primary/secondary sources; and formats of information: number, text, sound, visual, multimedia; and use information for a purpose.		
Skills	Level	Comments
Distinguish between the concepts of information (organized data and facts) and data (raw facts and figures) and identify examples of each.	I	
Recognize that information gathering is based upon a need (e.g., gather information to learn more about a topic or gather information to answer questions).	C	
Identify primary source information—firsthand information about a person, place or event and secondary source information—secondhand information interpreted by another person about a person, place, thing or event (e.g., primary sources such as diaries, letters, objects, and photographs; and secondary sources such as textbooks or biographies).	I	

Benchmark B: Use technology to find information, applying a research process to decide what information is needed, find sources, use information and check work.		
Skills	Level	Comments
Develop questions about an assigned topic and determine where the information may be found.	I	
Discuss search words: author, title, subject or topic.	I	
Search for information in an online library catalog, electronic encyclopedia or teacher-selected list of Web sites.	C	
Select, record and use needed information to answer a question or complete a project.	I	
Explain how to find copyright information on a resource (e.g., date of publication, copyright notice, statement of ownership).	I	
Give credit to the sources used for work by listing the author, the name of the source and the copyright date.	C	
Explain how information was selected.	C	

Benchmark C: Use the Internet to find, use and evaluate information.		
Skills	Level	Comments
Label Internet browser elements and explain their function • toolbar and buttons • favorites/bookmarks • history	C	
Type a simple search term in a teacher or librarian selected search engine to find general information (e.g., “weather”).	C	
Review the home page of a teacher or librarian selected Web site.	C	
Read the list of results retrieved from a simple search performed in a search engine and select one of the search results and review the information it provides.	I	

Benchmark D: Identify, access and use electronic resources from both free and fee-based Internet sources.		
Skills	Level	Comments
Use appropriate access code (username, password) to gain access to online resource (e.g., district network resources, subscription databases and resources that can be accessed remotely—outside the school and/or from home).	I	
Use age-appropriate Internet resources and fee-based (subscription resources) delivered by the Internet.	I	

Montpelier Schools
Fourth Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Understand computer and multimedia technology concepts and communicate using the correct terminology.		
Skills	Level	Comments
Learn and use new technology terminology based on the computer and multimedia technology resources being used.	C	
Define technological terms as discovered.	C	

Benchmark B: Use appropriate tools and technology resources to complete tasks and solve problems.		
Skills	Level	Comments
Explain how input and output devices operate and interact with computers and multimedia technology resources.	C	
Demonstrate ability to login and use basic network services.	C	
Discuss different software programs and what they do.	C	
Discuss image formats (JPEG, GIF, TIFF).	C	
Save, transport and access stored information from portable devices - portable hard drives - universal serial bus—USB devices - memory sticks - CD/RW and DVD/RW	I	
Demonstrate how technology productivity tools can be used to help understand data.	I	
Collect/create digital images and sounds related to a particular topic. - Digital Camera - Scanner - Sound Recorder	I	
Demonstrate appropriate keyboarding skills.	C	

Benchmark C: Use productivity tools to produce creative works and prepare publications.		
Skills	Level	Comments
Use productivity tools and peripherals to increase skills and facilitate learning throughout the curriculum.	I	
Use technology resources for collaborating and brainstorming ideas (e.g., using concept-mapping programs in groups). SMART Ideas	C	
Use media and technology resources for presenting information - Projectors - Video cameras - DVD	I	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Identify the concepts and operations of communication systems.		
Skills	Level	Comments
Collect and evaluate examples of good design (contrast, size, arrangement) in print and electronic media.	I	
Investigate online learning environments • online courses • distance learning • video-conferencing • productions	C	
Contribute to real time classroom technology communication sessions.	C	

Benchmark B: Develop, publish and present information in print and digital formats.		
Skills	Level	Comments
Organize presentations by using storyboarding techniques.	I	
Construct information by using a variety of software applications.	C	
Edit digital images using photo editing software • crop • enhance brightness and/or contrast • adjust color • resize	I	
Generate a document that includes graphics from more than one source (e.g., find images that match assignment needs and insert them into a document).	I	
Develop a slide show using graphics, text and audio from more than one source (e.g., create a presentation about Ohio government with text, pictures and music or narration).	I	
Present information in a class video project.	I	
Identify the proper structure and components of e-mail: - a Address structure; - b Signature line; - c Subject line - d Body of message	I	
Use e-mail to share information.	C	

Benchmark C: Use technology communications to participate in online group collaborative interactive projects and activities.		
Skills	Level	Comments
Compose, send, receive and reply to e-mail	I	
Present and receive information in teacher/student directed online learning or video-conferencing activities (e.g., government agencies, historical society or museum).	I	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A:

Describe types of information: facts, opinions, primary/secondary sources; and formats of information: number, text, sound, visual, multimedia; and use information for a purpose.

Skills	Level	Comments
Collect information (organized data and facts) and data (raw facts and figures) and identify answers to questions (e.g., locate data in a newspaper article, identify information on a sign).	C	
Discuss and define the difference between fact and opinion (e.g., the cafeteria served pizza today—fact, the pizza was good—opinion).	C	
Identify ways information can be presented (e.g., text, visual information on a map, information displayed in pictures or as graphics).	C	
Use primary source material to describe a person, place, thing or event (e.g., oral history, diary entries, photos, etc.).	I	

Benchmark B:

Use technology to find information, applying a research process to decide what information is needed, find sources, use information and check work

Skills	Level	Comments
Determine questions to be answered by research.	C	
Identify search terms for identified questions: author, title, subject, keyword.	C	
Select needed information from a defined group of resources: library catalog, online encyclopedia and subject list of age appropriate Web sites.	I	
Record and organize information gathered from selected resources to generate a product.	I	
Construct a list of the sources used in creating the project: author, title of source and date.	C	
Evaluate the product to determine if the research questions were answered.	I	

Benchmark C:

Use the Internet to find, use and evaluate information.

Skills	Level	Comments
Choose a search engine or directory specifically designed for students to locate information on the Internet.	I	
Type a simple search term in the search engine or directory to find facts and answer questions	C	
Read the list of results from the search engine or directory to locate potential Web sites relevant to the search topic.	C	
Choose a Web site and examine the information for facts by identifying information on the Web site • Author • Title • Date • Available products, services or resources • Special features (images, puzzles, activities)	I	

Benchmark D: Identify, access and use electronic resources from both free and fee-based Internet sources.		
Skills	Level	Comments
Demonstrate use of online fee-based (subscription or pay per use) electronic resources (e.g., state and/or district provided resources such as magazine databases, encyclopedias, dictionaries). • InfoOhio • Unitest Streaming • Online Encyclopedias	C	
Use a subscription resource or database (fee-based or pay-for-use) to locate information for a curricular need (e.g., select the subscription resource based on the curricular need). • InfoOhio • Unitest Streaming • Online Encyclopedias	C	

Montpelier Schools
Fifth Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools

Benchmark A: Understand computer and multimedia technology concepts and communicate using the correct terminology.		
Skills	Level	Comments
Define and use new technology terminology based on the computer and multimedia technology resources being used.	C	

Benchmark B: Use appropriate tools and technology resources to complete tasks and solve problems.		
Skills	Level	Comments
Describe how networks are used to access, share and store information • Software • Printers • Data	C	
Select the appropriate device to store needed information and independently save and access stored information from portable devices • how large is the saved information? • do others need to use the information? • what device will best store this information?	I	
Collect information for projects using • still and video digital cameras • scanners • electronic resources	C	
Create a presentation using multimedia software that incorporates, graphics, video and sound to present the findings of a group research project. • PhotoStory • iMovie • Movie Maker • Audacity	I	
Investigate technology tools used for researching problems and acquiring information and data	C	
Use appropriate hand/finger positions to key all letters (e.g., demonstrate ability to appropriately keyboard and assess accuracy).	C	

Benchmark C: Use productivity tools to produce creative works and prepare publications.		
Skills	Level	Comments
Select and use appropriate software applications to complete content-specific tasks (e.g., use desktop publishing software to create a newsletter, use drawing programs to create artwork).	C	
Investigate technology resources for individual and collaborative writing, communication and publication of creative works (e.g., video editing, desktop publishing).	C	
Use technology resources for presenting information (e.g., distance learning and interactive boards).	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Identify the concepts and operations of communication systems.		
Skills	Level	Comments
Implement basic design components (contrast, size, arrangement) in print or electronic media productions.	C	
Determine ways in which people collaborate in real time with individual and groups located in different school districts, communities, states and countries.	I	
Describe and participate in different types of online learning environments • online classes • distance learning • video conferencing • productions	C	

Benchmark B: Develop, publish and present information in print and digital formats.		
Skills	Level	Comments
Produce a slide show from storyboard, using text, graphics and sound with appropriate transitions and effects. • PowerPoint • PhotoStory	C	
Collaborate in a class video project (e.g., act as camera operator, actor or director in a video project as part of a unit of study).	I	
Use a simple authoring tool to create class Web page	I	
Evaluate and modify a presentation or document for different audiences (e.g., one person or a group of people).	I	
Use advanced software features to publish information in printed form (e.g., card, calendar, banner, one-page report, flyer, newsletter).	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A:

Describe types of information: facts, opinions, primary/secondary sources; and formats of information: number, text, sound, visual, multimedia; and use information for a purpose.

Skills	Level	Comments
Develop a systematic plan for organizing information using a basic organizing concept (e.g., subject, chronology, date).	I	
Choose a variety of formats for presenting information • Pictures • Texts • Slides • Audio • Video	C	
Understand that there are conditions where information cannot be used (e.g., copyright restrictions on the use of cartoon characters, copying a classmate's project).	C	
Distinguish between relevant and irrelevant information in an information source (e.g., information matches question to be answered, facts apply to the topic).	C	
Apply primary and secondary sources to investigate a person, place, thing or event, and identify each source as primary or secondary.	C	

Benchmark B:

Use technology to find information, applying a research process to decide what information is needed, find sources, use information and check work

Skills	Level	Comments
Identify questions related to an assigned topic or personal information need.	C	
Determine the best sources to use for the assigned topic or personal information need.	C	
Select and access information resources: online library catalog, Web sites and electronic formats (e.g., CD-ROM, DVD, audio files).	C	
Record and use selected information to create a product for the assigned topic or personal information need.	C	
Cite sources used: author, title of resource, publisher or source of information, and copyright date.	C	
Describe how information about a topic was gathered (e.g., discuss the information process).	C	

Benchmark C:

Use the Internet to find, use and evaluate information.

Skills	Level	Comments
Explain the elements and meaning of a Web site URL: name of the site, domain, and extensions for specific pages.	I	
Perform a search in an age-appropriate search engine or a Web directory by typing in one or more search terms.	C	
Read list of results from the search and select potential relevant Web sites.	C	
Identify information on the Web site: URL extensions, author, title, date produced, special features (images, puzzles, activities), products, services, resources, etc	C	
Examine the information retrieved from the Web site for the author's expertise, the accuracy of the information presented and the bias.	C	

Benchmark D: Identify, access and use electronic resources from both free and fee-based Internet sources.		
Skills	Level	Comments
Use a username and password to access an information source (e.g., an online library catalog, a fee-based Web site requiring user information to access the site, district network requiring student login).	C	
Examine coverage of information in magazine databases, online biography sources and subject guide sources.	C	
Distinguish different types of online information databases (free or fee-based) and select the best resource based on curricular need.	C	

Montpelier Schools
Sixth Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Demonstrate an understanding of concepts underlying hardware, software and connectivity.		
Skills	Level	Comments
Use vocabulary related to computer and multimedia technology systems (e.g., network, local area network—LAN, wide area network—WAN, wireless, connectivity).	C	
Describe how computers connect to the Internet (e.g., what is the information super highway/World Wide Web and how can you connect to it?).	I	

Benchmark B: Select appropriate technology resources to solve problems and support learning.		
Skills	Level	Comments
Explain the purpose of software programs.	M	
Present independent research findings in a multimedia format.	C	
Investigate technology tools used to organize and represent data collected in problem situations.	C	
Demonstrate proper keyboarding techniques, assess keyboarding accuracy and develop speed.	C	

Benchmark C: Use productivity tools to produce creative works, to prepare publications and to construct technology-enhanced models.		
Skills	Level	Comments
Use content-specific tools, software and simulations to support learning and research (e.g., thermometers, applets, interactive geometric programs, model robots).	I	
Apply technology resources to create an educational project (e.g., use a spreadsheet to organize the data that represents the results from an experiment).	I	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Communicate information technologically and incorporate principles of design into the creation of messages and communication products.		
Skills	Level	Comments
Explain that information is communicated for specific purposes.	I	
Define principles of design used to create print, multimedia and Web communications or products (e.g., color, contrast, repetition, alignment, proximity).	I	
Produce information products that incorporate principles of design.	I	

Benchmark B: Develop, publish and present information in a format that is appropriate for content and audience.		
Skills	Level	Comments
Create and publish information in printed form (e.g., use software to produce homework assignments, reports, flyers, newsletters).	C	
Develop and publish information in electronic form (e.g., slide presentations, multimedia products, Web materials).	C	

Benchmark C: Select appropriate technology communication tools and design collaborative interactive projects and activities to communicate with others.		
Skills	Level	Comments
Use e-mail functions including: a Sending; b Receiving; c Replying; d Adding a hyperlinked address in message; e Organizing mail folders; and f Adding attachments to message	C	
Participate in discussion lists, message boards, chat and other means of appropriate electronic communication (e.g., ask-an-expert, pen pals).	I	
Investigate assigned topics using online learning resources (e.g., weblogs, Web cast, video-conferencing and other distance learning opportunities).	I	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: Evaluate the accuracy, authority, objectivity, currency, coverage and relevance of information and data sources.		
Skills	Level	Comments
Select relevant information by identifying main ideas and supporting facts that help answer questions.	C	
Determine that information located can be used legally and choose appropriately (e.g., locate copyright information for print and graphic information, check for copyright restrictions).	C	
Check copyright and publication dates to determine currency of information.	C	
Investigate the authority of an online information source to determine the author's qualification to be an expert about a topic (e.g., famous scientist versus a sixth-grader's Web site; well-known organization versus a personal Web site).	C	

Benchmark B: Use technology to conduct research and follow a research process model which includes the following: develop essential question; identify resources; select, use and analyze information; synthesize and generate a product; and evaluate both process and product		
Skills	Level	Comments
Generate questions to be answered or a position to be supported when given a topic.	C	
Recognize that finding and using more than one source can produce a better product.	C	
Use a variety of technology resources for curriculum needs and personal information needs: library catalog, online encyclopedia, Web sites.	C	

Benchmark B: Use technology to conduct research and follow a research process model which includes the following: develop essential question; identify resources; select, use and analyze information; synthesize and generate a product; and evaluate both process and product		
Skills	Level	Comments
Examine information in different types of subscription resources—fee-based, pay-to-use to locate information for a curricular need (e.g., magazine database, picture archive, online encyclopedia).	C	
Identify relevant facts, check facts for accuracy, record appropriate information and create an information product to share with others.	C	
List information sources used in a district-adopted or teacher-prescribed format (e.g., MLA, APA).	C	
Review how the information found for the project was used and discuss the quality of the product.	C	

Benchmark C: Develop search strategies, retrieve information in a variety of formats and evaluate the quality and appropriate use of Internet resources.		
Skills	Level	Comments
Explain the function of a Web browser (e.g., what is the difference between the browser software and a page on the Internet?).	M	
Explain the difference between a subscription (fee-based database) and the free Internet.	M	
Identify keywords which describe the information need and use keywords as search terms (e.g., review search engine “help” page to determine methods for entering search terms).	M	
Use phrase searching in appropriate search engines to improve results.	M	
Incorporate place searching when searching for information using assigned directories and search engines.	C	
Evaluate Web information for: a Author’s expertise (authority); b Accuracy of information presented; c Parameters of coverage (including objectivity and bias); and d Currency of information	C	
Compare the range of information available from multiple information databases (e.g., examine the purpose and scope of each database and how it would be used for a particular assignment).	C	

Benchmark D: Select, access and use appropriate electronic resources for a defined information need.		
Skills	Level	Comments
Demonstrate search techniques: author, title, subject for subscription (fee-based) databases.	C	
Use online library catalog to choose and locate a variety of resources on a topic.	C	

Montpelier Schools
Seventh Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Demonstrate an understanding of concepts underlying hardware, software and connectivity.		
Skills	Level	Comments
Use vocabulary related to computer and multimedia technology systems (e.g., universal serial bus—USB, hubs and switches).	C	
Explain how computer components interact.	C	
Explain the purpose and different functions of software programs.	C	

Benchmark B: Select appropriate technology resources to solve problems and support learning.		
Skills	Level	Comments
Solve problems using all available technologies for inquiry, investigation, analysis and presenting conclusions.	C	
Investigate various formats of video content and methods of presentation (e.g., .wmv, mpeg, .avi, flash).	C	
Edit video clips using video editing software.	I	
Develop speed and accuracy when keyboarding, and transition to a word processing environment.	C	

Benchmark C: Use productivity tools to produce creative works, to prepare publications and to construct technology-enhanced models.		
Skills	Level	Comments
Use content-specific tools, software and simulations to support learning and research to create educational projects (e.g., aerodynamic model design, bridge building simulation, design tools, how it works Web-sites).	C	
Apply technology resources to support group collaboration and learning throughout the curriculum.	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Communicate information technologically and incorporate principles of design into the creation of messages and communication products.		
Skills	Level	Comments
Classify reasons to communicate information and explain why technology enhances communication (e.g., to explain, inform, persuade, sell, archive information in ways that reach a variety of audiences).	C	
Integrate advanced design features into communication products (e.g., background selection, framing, set design).	C	
Generate multimedia presentations that communicate information for specific purposes.	M	

Benchmark B: Develop, publish and present information in a format that is appropriate for content and audience.		
Skills	Level	Comments
Select an appropriate software tool to create and publish print information (e.g., word processor for a report, desktop publishing tool for signs/calendars/newsletters).	C	
Distinguish electronic file types and determine extensions including .txt, .rtf, .doc, .pdf and others.	C	
Insert original sound files into multimedia presentation (e.g., AVI, WAV, MPEG).	C	
Insert copyright-free images (photos/graphics) into multimedia presentations (e.g., GIF, JPEG).	C	
Transform digital images by using editing software to: - a Crop; - b Rotate, flip, invert; - c Add text, borders, decorative elements; - d Adjust color (apply spot coloring, image touch-up); and - e Layer or merge images.	C	

Benchmark C: Select appropriate technology communication tools and design collaborative interactive projects and activities to communicate with others.		
Skills	Level	Comments
Compose e-mail messages and incorporate advanced techniques (e.g., include attachments, send to multiple recipients, format stationary, manage inbox, create address book).	C	
Acquire and disseminate information by participating in virtual learning activities • Web casts • video-conferencing • distance-learning offerings	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge

Benchmark A: Evaluate the accuracy, authority, objectivity, currency, coverage and relevance of information and data sources.		
Skills	Level	Comments
Distinguish when current copyright dates of sources are important in answering an information need (e.g., science information on cloning, results of an election).	C	
Assess the objectivity (ability of an author to present information without bias) of a source when using information.	C	
Compare multiple sources (online encyclopedia, Web site, online magazine database, print source) to check accuracy of information (e.g., do facts match on each site?).	C	
Determine the scope of coverage for a given source (does the source cover all of the needed information?).	C	
Chart information gathered from multiple sources to determine facts to be used in a project.	C	

Benchmark B: Use technology to conduct research and follow a research process model which includes the following: develop essential question; identify resources; select, use and analyze information; synthesize and generate a product; and evaluate both process and product		
Skills	Level	Comments
Develop open-ended research questions about a defined information need.	C	
Select and evaluate relevant information about a specific topic in several sources.	M	
Select information from different types of subscription resources (fee-based, pay-to-use) to meet an information need (e.g., magazine database, picture archive, online encyclopedia).	M	
Compile information learned about a topic from a variety of sources.	M	
Create information products to share information using different formats • Print • audio recording • digital • video • slide show	C	
Evaluate how information was found and assess the quality of the information product.	C	

Benchmark C: Develop search strategies, retrieve information in a variety of formats and evaluate the quality and appropriate use of Internet resources.		
Skills	Level	Comments
Recognize that some Web information requires special software for its use (e.g., discuss what plug-ins are and how they expand the use of the Internet).	I	
Search a student-selected online directory or search engine by subject, keyword, author, title, date and/or format.	M	
Use Boolean operators in the search process (e.g., use Boolean logic to expand a search and to limit a search “AND,” “OR” or “NOT”).	C	
Perform searches for information in specific formats (e.g., graphics, images, journal articles).	C	
Compare information found in searches done on different types of Internet resources (e.g., directory, search engine, meta engine).	C	
Report elements of a Web site that make it effective (e.g., describe why the Web site is appropriate for the particular information needed).	C	

Benchmark D: Select, access and use appropriate electronic resources for a defined information need.		
Skills	Level	Comments
Compare search results through the use of different keywords (e.g., search for conservation information using “garbage” and search again using “waste disposal”).	C	
Examine information in different types of subscription (fee-based) databases to locate information for a curricular need • online encyclopedia • online subject dictionaries • magazine index • picture archive	C	

Montpelier Schools
 Eighth Grade
 Technology Applications and Information Tools
 Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Skills	Level	Comments
Benchmark A: Demonstrate an understanding of concepts underlying hardware, software and connectivity.	C	
Describe how computer and multimedia technology systems work (e.g., asynchronous transfer mode—ATM, Internet protocol—IP, local area networks—LAN, wide area networks—WAN, wireless).	I	

Benchmark B: Select appropriate technology resources to solve problems and support learning.		
Skills	Level	Comments
Incorporate all available technology tools and resources to research, investigate, solve and present findings in a problem situation.	C	
Create a video production related to a class activity.	C	
Research educational video clips available online for use in class projects (e.g., consider copyright and fair use issues when selecting video clips).	C	
Demonstrate effective keyboarding skills in a word processing environment.	C	

Benchmark C: Use productivity tools to produce creative works, to prepare publications and to construct technology-enhanced models.		
Skills	Level	Comments
Use content-specific tools, software and simulations to support learning, and research societal and educational problems (e.g., economic simulations, city planning simulation, flight simulators, rapid prototyping).	C	
Apply technology resources to support personal productivity, and learning throughout the curriculum.	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A:

Communicate information technologically and incorporate principles of design into the creation of messages and communication products.

Skills	Level	Comments
Determine audience characteristics that impact the content of the message (e.g., level of understanding, level of interest).	I	
Differentiate audience factors that influence the selection of the communication tool (e.g., will the message be communicated to an individual or a small or large group? will the message be communicated more than once?).	I	
Examine the connections among message content, context and purpose (e.g., is the content of the message impacted by the context in which the message is given—does the context impact the purpose?).	C	
Reconstruct messages with different communication tools and determine if the tool changes the meaning of the message.	I	
Identify and practice the following Universal Design principles that ensure accessibility for all users of communication projects or products: a Image size b Alt attributes/tags c Use of tables and frames d Use of style sheets e Formatting f Use of color text legibility and readability g Fonts, formatting and captioning	C	

Benchmark B:

Develop, publish and present information in a format that is appropriate for content and audience

Skills	Level	Comments
Construct and publish information in printed and electronic form (e.g., printed reports, resumes, brochures, charts and electronic presentations, videos, Web sites).	C	
Select appropriate file types (documents, sounds, images, and multimedia) based on communication need.	C	
Evaluate information product based on content and audience (e.g., did the information communicate the intended message to the correct audience?).	C	

Benchmark C:

Select appropriate technology communication tools and design collaborative interactive projects and activities to communicate with others.

Skills	Level	Comments
Design collaborative interactive activities or projects (e.g., online election for school office, survey, data collection).	I	
Disseminate results obtained through collaborative research projects to a larger audience (e.g., post results on a Web page, e-mail to group participants).	C	
Select an appropriate communications tool to obtain and share information (e.g., e-mail, chat, message board, video-conferencing, online project).	C	
Critique e-mail to determine communication clarity, and consider appropriate operations and etiquette (e.g., reply, reply all, include original message in reply, etc.).	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A:

Evaluate the accuracy, authority, objectivity, currency, coverage and relevance of information and data sources.

Skills	Level	Comments
Understand the structure and organization of information sources including key words, subject directory, subject search in a library catalog or search engine.	C	
Demonstrate how to determine copyright issues when creating new products: • Ask permission to use articles, quotations and graphics • Credit information to be included in the product.	I	
Examine two Web sites with opposing viewpoints and describe the objectivity and intent of the author (e.g., candidates in an election, or other public issues).	C	
Evaluate the validity of information by comparing information from different sources for accuracy (e.g., what makes the author an expert—is information the same in multiple sources?).	C	

Benchmark B:

Use technology to conduct research and follow a research process model which includes the following: develop essential question; identify resources; select, use and analyze information; synthesize and generate a product; and evaluate both process and product

Skills	Level	Comments
Formulate an essential question to guide the research process.	C	
Identify and evaluate relevant information and select pertinent information found in each source.	C	
Analyze information, finding connections that lead to a final information product.	C	
Demonstrate how to determine copyright issues when creating new products (e.g., permission to use articles and graphics, credit information to be included).	C	
Use a teacher or district designated citation or style manual to credit sources used in work (e.g., MLA style manual, APA Guidelines, or other selected style manuals).	C	
Digitize information for archiving and future use (e.g., creating an electronic portfolio of curricular projects).	I	
Revise and edit information product	C	
Evaluate final product for its adherence to project requirements (e.g., recognize weaknesses in process and product and find ways to improve).	C	

Benchmark C:

Develop search strategies, retrieve information in a variety of formats and evaluate the quality and appropriate use of Internet resources.

Skills	Level	Comments
Troubleshoot error messages in a Web browser (e.g., verify the address, use refresh and/or stop buttons).	I	
Incorporate Boolean operators in the search process for curricular needs (e.g., know the basic Boolean operators and use them in a search).	M	

Benchmark C:

Develop search strategies, retrieve information in a variety of formats and evaluate the quality and appropriate use of Internet resources.

Skills	Level	Comments
Compare information found in searches completed on different search engines (directories, spiders, meta crawlers) and discuss the differences in how search engines select, rank and display information: a Relevancy b Popularity; and c Paid placement	C	
Compare several Web sites on the same topic and evaluate the purpose of each site (e.g., use several sites for a specific curricular need and note whether the sites have similar or conflicting data).	C	

Benchmark D:

Select, access and use appropriate electronic resources for a defined information need.

Skills	Level	Comments
Select research databases that align with identified information need (e.g., specialized databases on government, science, history, as needed for assignments).	C	
Retrieve information in different types of subscription (fee-based) databases to support information for a curricular need.	C	
Locate and use advanced search features and appropriate tools such as Boolean operators ("AND," "OR", or "NOT") and a thesaurus in an online database.	C	

Montpelier Schools
Ninth Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Integrate conceptual knowledge of technology systems in determining practical applications for learning and technical problem-solving.		
Skills	Level	Comments
Explore state-of-the-art devices to store data that will be used for researching projects.	I	
Create a design for a basic network and list skills needed to manage networks.	I	
Describe strategies for identifying and solving routine hardware and software problems that occur during everyday use.	I	

Benchmark B: Identify, select and apply appropriate technology tools and resources to produce creative works and to construct technology-enhanced models.		
Skills	Level	Comments
Identify and use input and output devices to operate and interact with computers and multimedia technology resources (e.g., digital video camera, mobile cameras-a camera on a robot base, like a Mars rover, how to connect analog equipment to digital equipment).	C	
Demonstrate proficiency in all productivity tools - word processing - spreadsheet - database - presentation - desktop publishing	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Apply appropriate communication design principles in published and presented projects.		
Skills	Level	Comments
Format text, select color, insert graphics and include multimedia components in student-created media/communication products.	C	
Modify electronic publications and other communication products to meet accessibility guidelines so that access to information is not limited.	C	
Examine how and why image, language, sound and motion convey specific messages designed to influence the audience.	C	
Assess the accuracy of the communication product.	C	

Benchmark B: Create, publish and present information, utilizing formats appropriate to the content and audience.		
Skills	Level	Comments
Use e-mail in a teacher-moderated discussion group and in threaded discussion lists.	C	
Use technology to publish information in electronic form Web • Multimedia • digital video • electronic portfolio	C	
Validate use of communication techniques.	C	

Benchmark C: Identify communication needs, select appropriate communication tools and design collaborative interactive projects and activities to communicate with others, incorporating emerging technologies.		
Skills	Level	Comments
Demonstrate communication clarity and use elements and formats of e-mail to communicate with others • discussion lists • message boards • chat • instant messaging	I	
Identify and use the appropriate communication tool to collaborate with others Presentation Web site digital video	C	
Investigate the uses of video-conferencing, Web casting, and other distance-learning technologies (e.g., interviews, meetings, course work).	I	
Develop collaborative online projects to research a problem and disseminate results.	I	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge

Benchmark A: Determine and apply an evaluative process to all information sources chosen for a project.		
Skills	Level	Comments
Define terms which determine information validity: - a Accuracy; - b Authority; - c Objectivity; - d Currency; and - e Coverage (including objectivity and bias)	C	
Determine the author's authority for all resources and identify points of agreement and disagreement among sources.	C	

Benchmark B: Apply a research process model to conduct research and meet information needs.		
Skills	Level	Comments
Determine the essential questions and plan research strategies.	M	
Select and evaluate appropriateness of information from a variety of resources, including online research databases and Web sites to answer the essential questions.	M	
Integrate copyrighted information into an information product, following appropriate use of guidelines (e.g., quote using proper citation format, request permission for use).	C	

Benchmark B: Apply a research process model to conduct research and meet information needs.		
Skills	Level	Comments
Identify relevant facts, check facts for accuracy and record appropriate information.	C	
Incorporate a list of sources used in a project using a standard bibliographic style manual (e.g., MLA and APA Style Manuals).	C	
Evaluate the research process and product as they apply to the information need (e.g., does the process reflect the actual information need).	C	

Benchmark C: Formulate advanced search strategies, demonstrating an understanding of the strengths and limitations of the Internet, and evaluate the quality and appropriate use of Internet resources.		
Skills	Level	Comments
Identify multiple directories and search engines matching curricular need (e.g., given an assignment, use knowledge of tools to pick an appropriate tool to search for information).	C	
Construct search strategies focused on the retrieval of specific search results by incorporating Boolean operators “AND,” “OR” or “NOT” and adjacency/proximity techniques.	C	
Compare and chart the search results from multiple Web sites to check for consistency of information (e.g., compare data on acid rain from more than one site).	C	
Establish a criteria for evaluating the information retrieved through Internet searching: author’s expertise, bias, coverage of topic and timeliness.	C	

Benchmark D: Evaluate choices of electronic resources and determine their strengths and limitations.		
Skills	Level	Comments
Integrate search strategies within the electronic resource that targets retrieval for specific information need (e.g., limit by date of publication, focus on specific format such as image, sound file).	C	
Review strengths and weaknesses of various types of electronic resources for research need (e.g., compare subject specific magazine database to general online index of articles).	C	
Demonstrate the difference between databases, directories and database archives (e.g., free vs. fee-based, delivery mechanism, such as CD, DVD, network, Internet, and general vs. specific discipline).	C	
Select a specific database for an assignment and explain why it is the appropriate one to use (e.g., in researching a particular author, use a literary database of biographical and critical information about writers).	C	

Montpelier Schools
Tenth Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Integrate conceptual knowledge of technology systems in determining practical applications for learning and technical problem-solving.		
Skills	Level	Comments
Examine current and past devices for storing data and predict potential devices for the future.	C	
Analyze various types of connectivity, and list pros and cons of each.	I	
Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use.	C	

Benchmark B: Identify, select and apply appropriate technology tools and resources to produce creative works and to construct technology-enhanced models.		
Skills	Level	Comments
Utilize advanced word processing and desktop publishing features and programs.	C	
Use equipment related to computer and multimedia technology imaging • Digitalization • optical character recognition • scanning • computerized microscopes	C	
Identify/recognize state-of-the-art technology tools for solving problems and managing personal/professional information.	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Apply appropriate communication design principles in published and presented projects.		
Skills	Level	Comments
Identify and incorporate common organizational techniques used in electronic communication (e.g., cause and effect, compare and contrast, problem and solution strategies).	C	
Manipulate communication design elements (image, language, sound and motion) based on intent of the message (e.g., inform or persuade).	C	
Compare and contrast the accuracy of the message/communication product with the audience results (e.g., was the audience influenced by inaccurate information?).	C	
Verify accessibility components of the communication product and adapt as needed.		

Benchmark B: Create, publish and present information, utilizing formats appropriate to the content and audience.		
Skills	Level	Comments
Publish information in printed and electronic version, and select appropriate publication format (e.g., paper, Web, video).	C	
Evaluate communication products.	C	

Benchmark C: Identify communication needs, select appropriate communication tools and design collaborative interactive projects and activities to communicate with others, incorporating emerging technologies.		
Skills	Level	Comments
Contribute to organized e-mail discussions (e.g., discussion list, list serv, threaded discussion list, courseware discussion).	C	
Employ online communication capabilities to make inquiries, do research and disseminate results (e.g., develop dialogues on issues in U.S. government).	C	
Implement online-structured learning experiences (e.g., tutorials, virtual classes, industry certification courses).	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: Determine and apply an evaluative process to all information sources chosen for a project.		
Skills	Level	Comments
Examine information for its accuracy and relevance to an information need (e.g., for a report on pollution, find information from sources that have correct and current information related to the topic).	C	
Identify relevant facts, check facts for accuracy and record appropriate information (e.g., follow a standard procedure to check information sources used in a paper).	C	
Create a bibliography of sources in an electronic format.	C	
Select appropriate information on two sides of an issue (e.g., identify the author of each information source and their expertise and/or bias).	C	

Benchmark B: Apply a research process model to conduct research and meet information needs.		
Skills	Level	Comments
Select the essential question to be examined by the research.	M	
Identify sources most likely to have the needed information and determine subjects and keywords to be used in searching magazine databases and other electronic reference resources.	C	
Evaluate information and select relevant and pertinent information found in each source, and maintain accurate records of sources used.	C	
Organize and analyze information, finding connections that lead to a final product.	C	
Follow copyright law and guidelines, using standard bibliographic format to list sources.	M	
Assess whether the essential questions are answered, gather more information and data and modify search terms as needed. Edit the product.	C	
Review and evaluate research process and the resources used (e.g., how can the research process be improved?).	C	

Benchmark C:

Formulate advanced search strategies, demonstrating an understanding of the strengths and limitations of the Internet, and evaluate the quality and appropriate use of Internet resources.

Skills	Level	Comments
Construct an effective search strategy to retrieve relevant information through multiple search engines, directories and Internet resources.	C	
Narrow or broaden the search strategy by modifying the keywords entered in the original search strategy.	M	
Employ a systematic approach to judge the validity of a Web information match against the defined information need (e.g., researching an author through the Web requires finding biographical information plus criticisms of the author's works).	C	
Examine the information retrieved through Internet searching for authenticity of information, bias, currency, relevance and appropriateness.	M	

Benchmark D:

Evaluate choices of electronic resources and determine their strengths and limitations.

Skills	Level	Comments
Choose a topic and identify appropriate electronic resources to use, citing the name and date of the resource database archive collection.	C	
Research and critique information in different types of subscription (fee-based) electronic resources to locate information for a curricular need.	C	
Investigate tools within electronic resources to generate search strategies (e.g., use a thesaurus to identify subject terms for improved retrieval of information).	C	

Montpelier Schools
Eleventh Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Integrate conceptual knowledge of technology systems in determining practical applications for learning and technical problem-solving.		
Skills	Level	Comments
Make informed choices among technology systems, resources and services.	C	
Explore state-of-the-art devices to store data.	C	
Research technology systems, resources and services to solve technical problems.	C	

Benchmark B: Identify, select and apply appropriate technology tools and resources to produce creative works and to construct technology-enhanced models.		
Skills	Level	Comments
Apply emerging technology tools and resources for managing and communicating personal/professional information (e.g., distance-learning, voice-recognition tools, personal digital devices, automatic identification systems, bar codes, radio frequency tags).	C	
Assimilate productivity and technological tools into all aspects of solving problems and managing personal information and communications.	C	
Use technology tools to model complex systems of information to improve the communication of and access to the information (e.g., modeling physics principles, graphic/geographic information system, weather modeling).	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Apply appropriate communication design principles in published and presented projects.		
Skills	Level	Comments
Employ design techniques taking into consideration the psychological impact and cultural connotations of color when designing for print media and multimedia, video and Web pages.	C	
Apply principles of design (contrast, repetition, alignment and proximity) for academic and personal needs (e.g., resume, scholarship application).	C	
Adapt design concepts to emerging technologies.	C	
Select and evaluate message-appropriate designs for print, multimedia, video and Web pages for curricular and personal needs (e.g., silly graphics may not be appropriate for academic projects).	C	

Benchmark B: Create, publish and present information, utilizing formats appropriate to the content and audience.		
Skills	Level	Comments
Archive communication products in appropriate electronic forms (e.g., store electronic publications so that they may be accessed when needed).	C	
Critique personal communication products.	C	

Benchmark C: Identify communication needs, select appropriate communication tools and design collaborative interactive projects and activities to communicate with others, incorporating emerging technologies.		
Skills	Level	Comments
Select an appropriate e-mail discussion list to meet communication needs (e.g., purpose of list, participants, audience, topics, ease of use).	C	
Integrate online communication capabilities to make inquiries, do research and disseminate results (e.g., group writing projects, college searches, career information inquiry).	C	
Collaborate in online learning or video-conferencing activities based on research and/or an investigation of real-world problems (e.g., study of community or regional ecosystem).	C	
Select and use appropriate online structured learning experiences to meet individual learning needs.	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A: Determine and apply an evaluative process to all information sources chosen for a project.		
Skills	Level	Comments
Seek and evaluate information to answer both personal and curricular needs.	C	
Analyze the intent and authorship of information sources used for a curricular need.	C	
Determine valid information for an assignment from a variety of sources.	C	

Benchmark B: Apply a research process model to conduct research and meet information needs.		
Skills	Level	Comments
Select essential questions for research and use a recognized or personally developed model to conduct independent research.	C	
Identify, evaluate information and select relevant and pertinent information found in each source.	C	
Identify relevant facts, check for validity, and record appropriate information keeping track of all sources.	C	
Analyze information and synthesize into a communicated product.	C	
Respect copyright laws and guidelines, and use standard bibliographic format to list sources.	M	
Critique and revise the information product.	C	
Review the research process for efficiency and effectiveness.	C	

Benchmark C:

Formulate advanced search strategies, demonstrating an understanding of the strengths and limitations of the Internet, and evaluate the quality and appropriate use of Internet resources.

Skills	Level	Comments
Demonstrate the use of parentheses for nesting search terms to alter retrieval strategies through multiple Internet resources.	C	
Create a product on a specific curricular topic that includes annotated Web sites constructed according to a standard style manual (e.g., electronic pathfinder on careers).	C	
Develop a systematic approach to judge the value of the retrieved Web information.	C	

Benchmark D:

Evaluate choices of electronic resources and determine their strengths and limitations.

Skills	Level	Comments
Modify a search through the use of different key words and other techniques specific to an electronic resource (e.g., online database, Web-based index).	M	
Integrate online subscription resources and other electronic media to meet needs for research and communication on a routine basis.	C	
Differentiate coverage of electronic resources to select information need.	C	
Support choices of free and fee-based Web information used to create a class project.	C	

Montpelier Schools
Twelfth Grade
Technology Applications and Information Tools
Ohio Technology Content Standards 3, 4, and 5
Scope and Sequence

Key: I – Introduce, C – Continuation, M - Mastery

Standard 3

Technology for Productivity Applications

Students learn the operations of technology through the usage of technology and productivity tools.

Benchmark A: Integrate conceptual knowledge of technology systems in determining practical applications for learning and technical problem-solving.		
Skills	Level	Comments
Research and create technology systems, resources and services to solve technical problems.	C	

Standard 4

Technology and Communication Applications

Students use an array of technologies and apply design concepts to communicate with multiple audiences, acquire and disseminate information, and enhance learning.

Benchmark A: Apply appropriate communication design principles in published and presented projects.		
Skills	Level	Comments
Facilitate message intent by incorporating design elements that contribute to the effectiveness of a specific communication medium into student-generated products (e.g., black and white footage to imply documented truth; set design that suggests cultural context).	C	
Analyze the complexities and discrepancies found in communication products.	C	
Interpret ethical considerations and legal requirements involved in construction of communication products.	C	

Benchmark B: Create, publish and present information, utilizing formats appropriate to the content and audience.		
Skills	Level	Comments
Use Web technologies to disseminate information to a broader audience.	C	
Explain evaluation criteria and processes used to communicate with technology (e.g., telecommunications, Wi-Fi, voice over IP).	C	

Benchmark C: Identify communication needs, select appropriate communication tools and design collaborative interactive projects and activities to communicate with others, incorporating emerging technologies		
Skills	Level	Comments
Communicate using all manifestations of e-mail as needed for personal and curricular purposes, demonstrating appropriate and responsible use.	C	
Use all available online communication capabilities to make inquiries, do research and disseminate results.	C	
Research emerging communication technologies (e.g., wireless systems, open source software and systems, virtual reality).	C	

Standard 5

Technology and Information Literacy

Students engage in information literacy strategies, use the Internet, technology tools and resources, and apply information-management skills to answer questions and expand knowledge.

Benchmark A:

Determine and apply an evaluative process to all information sources chosen for a project.

Skills	Level	Comments
Evaluate information collected to answer both personal and curricular needs to determine its accuracy, authority, objectivity, currency and coverage.	C	
Acknowledge intellectual property in using information sources.	C	
Determine and apply an evaluative process to all information sources chosen for a project.	C	

Benchmark B:

Apply a research process model to conduct research and meet information needs

Skills	Level	Comments
Derive a personally developed research model to conduct independent research.	C	
Refine the information question to focus the research process, modifying the question as necessary to broaden or narrow the inquiry.	C	
Critique information sources to determine if different points of view are included	C	
Integrate multiple information sources in the research process.	M	
Create a product to communicate information, representing a personal point of view based on findings.	C	
Adhere to copyright and intellectual property laws and guidelines when creating new products (e.g., standard bibliographic format, permissions to use information created by others).	M	
Monitor progress and evaluate actions during the process, revising and incorporating new information as indicated by personal evaluation	C	
Archive final product in a format accessible in the future.	C	

Benchmark C:

Formulate advanced search strategies, demonstrating an understanding of the strengths and limitations of the Internet, and evaluate the quality and appropriate use of Internet resources.

Skills	Level	Comments
Incorporate defined field searching by initiating a search string identifying the desired field of information to be retrieved (e.g., search author or title).	C	
Create a stand-alone system for tracking Internet resources for personal and academic needs (e.g., postsecondary institutions of interest).	C	
Synthesize search results retrieved from a variety of Internet resources to create an information product for a targeted audience	C	
Critique research retrieved through the Internet for authority, accuracy, objectivity, currency, coverage and relevancy.	C	

Benchmark D: Evaluate choices of electronic resources and determine their strengths and limitations		
Skills	Level	Comments
Research information from electronic archives (e.g., list serv archives, weblogs).	C	
Use a variety of technology resources for curriculum needs and personal information needs (e.g., streaming video, CD/DVD, subscription database).	C	
Evaluate technology resources and determine strengths and weaknesses for curricular or personal needs	C	
Select an appropriate tool, online resource or Web-site based on the information need	C	